example the objections to the drawings under 37 CFR 1.84 or 1.152 mirror those made in previous Office Actions. On May 13 and November 3, 1998, corrections to the drawings were submitted and these corrected drawings were accepted by the present Examiner in his Office Action of January 20, 1999. Accordingly, the objections to the drawings set forth in the October 19 Office Action should be removed.

The rejections of the claims under 35 U.S.C 112, second paragraph, are respectfully traversed. The term "substantially uniform" as used in the claims is used consistent with its customary meaning. Webster's New World Dictionary, 2d ed. defines substantially as being "in the nature of"; and uniform is defined as "not varying or changing". This is consistent with the discussion at p.7, ll. 14-16; p. 7, l. 26 - p. 8, l. 2 and p. 9, ll. 1-8 of the specification, wherein it is indicated that the heat transferring seal and cooling gas provide for uniform heat transfer across the substrate. Moreover, at p. 9, ll. 17-27, it is explained how appropriate combinations of heat transferring seals and cooling gases could be chosen to meet this requirement. Therefore, it is clear what is encompassed by this term.

The Office Action appears to indicate that the term substantially must always render a claim "broad and unclear". However, a recent search of the USPTO patent database reveals that over *seven hundred thousand* US patents having the term "substantially" in one or more claims have been issued. Of these, it appears that 58 patents were allowed and passed to issue by the current Primary Examiner assigned to this case, including US Patent 5,858,254 "Multilayered Circuitized Substrate and Method of Fabrication" which appears to be directed to the semiconductor processing arts, as is the current application. It therefore appears that the term "substantially" is routinely used in claims and does not thereby make the claims "broad and unclear". Accordingly, these rejections should be removed.

As to the use of the term "heat transferring volume" in claim 3, the phrase means what it says. That is, a volume for transferring heat (e.g., as defined by the other structural elements recited in the claim). Claim 3 is therefore not indefinite.

In addition, the present claims are patentable over Cathey, Jr., U.S. Patent 5,096,536. Cathey fails to discuss the thermal conductivity properties of the O-ring seals placed between the substrate and the holding body of the plasma reaction chamber. Accordingly, the thermal conductivity properties now recited in the present claims are neither taught nor suggested by this reference.

"In order for a claim to be inherent in the prior art it is not sufficient that a person following the disclosure sometimes obtain the results set forth in the claim, it must invariably happen." Glaxo, Inc. v. Novopharm, Ltd., 830 F. Supp. 871, 874 (E.D. N.C. 1993), *aff'd,* 52 F.3d 1043 (Fed. Cir. 1995), *cert. denied,* 116 S. Ct. 516 (1995). In other words, only when "the prior inherent event can be established as a certainty" can a reference inherently teach a point for which it is cited. Phillips Petroleum Co. v. U.S. Steel Corp., 673 F. Supp. 1278 (D. Del. 1987), *affd.,* 865 F.2d 1247 (Fed. Cir. 1989). "That an event may result from a given set of circumstances is not sufficient to establish anticipation. Probabilities are not sufficient. . . . A prior inherent event cannot be established based upon speculation or where a doubt exists." Id.

In the present case, the claims recite a relationship between the thermal conductivity of two different materials: namely, the heat transfer seal and a gas. This relationship is explained at p. 9, ll. 20-24, for the requirement where a substantially uniform heat transfer across the wafer is to be achieved. Although Cathey, Jr. does disclose the use of O-ring seals between a wafer and an electrode, there is no discussion or suggestion of the use of such seals having thermal conductivity properties similar to the claimed heat transferring seal. Indeed, Cathy, Jr. relies solely on the thermal conductivity properties of the gas introduced into the void between the wafer and the supporting electrode. See, e.g., Cathey, Jr. at col. 4, ll. 58-66 and col. 6, ll. 15-21. Moreover, Cathey, Jr. specifically indicates that the pressure of the cooling gas may vary between 1.0 and 10.0 Torr. Because the thermal conductivity of the cooling gas necessarily depends upon the pressure, and because Cathey, Jr. does not discuss varying the properties (e.g., thickness, material composition, etc.) of the

O-ring seals, there must certainly be occasions where the thermal conductivities of these two elements are not matched so as to provide substantially uniform heat transfer across the wafer, as claimed. Thus, the elements of the present claims cannot be met for a certainty. Indeed, it is difficult to imagine how a reference that fails to discuss the thermal conductivity properties of the O-ring seals at all, could somehow inherently suggest the use of such seals having the specific thermal conductivity properties to achieve the claimed relationship.

Even further, Cathey, Jr. discloses a system wherein the presently claimed substantially uniform heat transfer across the wafer is truly unlikely to be achieved. Consider that Cathey, Jr. intentionally introduces an area of vacuum between the substrate and the holding body, between the inner and outer O-rings. Cathey, Jr. at col. 5, ll. 19-29. The heat transfer between the substrate and the holding body over this portion of the substrate must necessarily be different than that between the portion of the substrate disposed over the cooling gas and the holding body. Accordingly, the present claims are patentable over Cathey, Jr.

Even in the prior systems noted by Cathey, Jr., this substantially uniform heat transfer across the wafer would not be found. For example, Cathey, Jr. explains that in prior system, "the wafer and the electrode are not normally perfectly flat" and, as a consequence, "high vacuum voids" are created between the wafer and the electrodes". Cathey, Jr. at col. 2, ll. 12-20. These voids would necessarily be regions in which the heat transfer from the wafrer to the electrode would be different from that at other portions of the wafer -- thus, indicating that the heat transfer is not substantially uniform across the wafer. Even where the single O-ring was used, cooling gas was observed to leak into the etch chamber (Cathey, Jr. at col. 2, ll. 52-59), thus indicating that voids must still exist and, hence, that the heat transfer would not be substantially uniform across the wafer.

The additional citations of Kirchner et al., U.S. Patent 5,811,820 and Velbeck et al., U.S. Patent 5,177,363, for the heat transferring properties of Kapton™ do not cure these

basic deficiencies. Even if a Kapton™ O-ring were used in Cathey's apparatus, the present claims would not be met either because of the presence of the voids noted above, or the introduction of the vacuum between the different seals. These features would preclude the claimed substantially uniform heat transfer across the wafer, regardless of the material used for the O-rings. Accordingly, the claims are patentable over even the combination of these references.

The rejection of claim 14 has been obviated by appropriate amendments. Please charge any deficiencies of fees associated with this communication to our Deposit Account No. 02-2666.

Respectfully submitted,
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